



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/715,634	11/17/2000	Cheng-Hung Hung	98088CON	7799

7590 12/19/2002

Michelle B. Lando
Cabot Corporation
Billerica Technical Center
157 Concord Road
Billerica, MA 01821-7001

EXAMINER

AHMED, SHEEBA

ART UNIT

PAPER NUMBER

1773

DATE MAILED: 12/19/2002

8

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/715,634

Applicant(s)

HUNG ET AL.

Examiner

Sheeba Ahmed

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-55 is/are pending in the application.
- 4a) Of the above claim(s) 1-33 and 53-55 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 34-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1 and 4. 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group II, claims 34-52 in Paper No. 7 is acknowledged. The traversal is on the ground(s) that the claims of the two groups have similar subject matter and overlap to such an extent that there will be no serious burden on the Examiner to search and examine all of the pending claims at the same time. This is not found persuasive because, as pointed out by the Applicants, there are two criteria for a proper restriction requirement between patentably distinct inventions: (A) the inventions must be independent and (B) there must be a serious burden on the Examiner. In this case, both criteria have been met.

First, Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the cerium oxide particles could be made by a different process. For example, the cerium oxide particles could be made by mixing an aqueous solution of cerous nitrate with a base and heating the solution to produce the desired particles. Second, because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, search and examination of all pending claims, i.e., claims directed to the product and the process, would pose a serious burden on the Examiner. Hence, both

Art Unit: 1773

criteria (A) and (B) have been met and the requirement is still deemed proper and is therefore made FINAL.

Claims 1-55 are pending however claims 1-33 and 53-55 have been withdrawn from consideration.

Claim Objections

2. Claim 51 is objected to because of the following informalities:

Claim 51 recites "the composition of claim 1". However, claim 1 is directed to a method and not a composition. The dependency of claim 51 appears to be a typographical error. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 34, 39-44, and 49-52 are rejected under 35 U.S.C. 102(b) as being anticipated by Vallet-Regi et al. (*Synthesis and Characterization of CeO₂ obtained by Spray Pyrolysis Method*, **Material Science Forum Vol. 235-238 (1997)**, pages 291-296).

Vallet-Regi discloses a study of the synthesis and characterization of cerium oxide. SEM photographs of the material show that is formed as hollow spheres with

Art Unit: 1773

diameters ranging between 0.1 to 2 microns wherein each pyrosol sphere is constituted by a very large number of very small cerium oxide crystallites wherein the crystallites have a size of 50-100 angstroms (**thus meeting the limitations of claims 34 given that cenospherical aggregates are defined as having at least one hole that is visible via electron microscopy as shown in Figure 1(11) of the instant application, i.e., the structure is hollow, as defined in lines 9-14 of Page 6; the primary particle size limitation recited in claims 39-41, the cenospherical aggregate average diameter recited in claim 44, and the primary particle crystallite size recited in claims 51 and 52**) (See Abstract). With regards to the limitations that the aggregates have a density of 6 g/cm^3 or more, a density between 6-7 g/cm^3 , or that the aggregates have a surface area of $50 \text{ m}^2/\text{g}$ or more (**as recited in claims 42, 43, 49, and 50**), the Examiner takes the position that such material property limitations are met by the cerium oxides particulate composition disclosed by Vallet-Regi given that the chemical composition and the structure of the cerium oxide particulate composition disclosed by Vallet-Regi et al. and that of the claimed invention are identical. All limitations of claims 34, 39-44, and 49-52 are either disclosed or inherent in the above reference.

4. Claims 34-52 are rejected under 35 U.S.C. 102(b) as being anticipated by Marsh et al. (US 4,713,233).

Marsh et al. disclose metal oxide powders (Column 2, lines 47-48) having a high pore volume, large surface area, and small particle size wherein the metal oxide

Art Unit: 1773

includes metal oxide powders of cerium (Column 3, lines 43-60). The metal oxide powders produced by Marsh et al. are loosely agglomerated primary particles and/or aggregates of primary particles (*indicating that all metal oxide particles produced are in the form of agglomerates or aggregates*) having a spherical form at the aggregate and primary particle level (***thus meeting the limitation that the aggregates comprise spherical primary particles of cerium oxide wherein the aggregates are cenospherical and that 98% or more of the aggregates are cenospherical, as recited in claims 36-38, given that cenospherical aggregates are defined as aggregates having at least one hole that is visible via electron microscopy in lines 9-14 of Page 6 of the instant application***). The term agglomerate is defined as a collection of at least two or more primary particles held together by weak cohesive forces. The agglomerates are generally between 1 and 10 microns in effective spherical diameter (***thus meeting the limitations that the cenospherical aggregates have an average diameter (by weight) of 1-20 microns as recited in claims 44 and 45***) and the primary particles, defined as a single crystal, are usually less than 1 micron in diameter (***thus meeting the limitation that the primary particles have an average diameter (by number) of about 30nm or less, as recited in claims 39-41, and that the primary particles have a crystallite size of 1-30nm, as recited in claims 51 and 52***) and usually range from 0.05 to 0.7 microns in diameter (Column 6, lines 44-65). With regards to the limitation that the rest of the aggregates are aciniform aggregates (***as recited in claim 35***) having an average diameter (by number) of 500nm or less (***as recited in claims 46-48***), the Examiner takes the position that some of the

Art Unit: 1773

agglomerates or aggregates disclosed by Marsh et al. meet the limitations of aciniform aggregates given that lines 9-14 of Page 6 of the instant application defines aciniform aggregates as chain-like aggregates. For example, Marsh et al. state that their agglomerates are defined as a collection of at least two or more primary particles held together by weak cohesive forces hence when the agglomerate comprises only two primary particles, it meets the limitation of an aciniform aggregate having a particle diameter of less than 500nm, as defined by the instant invention. Furthermore, with regards to the limitations that the aggregates have a density of 6 g/cm^3 or more, a density between $6\text{-}7 \text{ g/cm}^3$, or that the aggregates have a surface area of $50 \text{ m}^2/\text{g}$ or more (*as recited in claims 42, 43, 49, and 50*), the Examiner takes the position that such material property limitations are met by the cerium oxides particulate composition disclosed by Marsh et al. given that the chemical composition and the structure of the cerium oxide particulate composition disclosed by Marsh et al. and that of the claimed invention are identical. All limitations of claims 34-52 are either disclosed or inherent in the above reference.


Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheeba Ahmed whose telephone number is (703)305-0594. The examiner can normally be reached on Mondays and Thursdays from 8am to 6pm.

Art Unit: 1773

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703)308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-5408 for regular communications and (703)305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)306-5665.


Sheeba Ahmed
Technology Center 1700
Art Unit 1773
December 16, 2002